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The Sun River Wildlife Management Area

FG-N-141

PRELIMINARY ENVIRONMENTAL REVIEW

Before the Montana Fish and Game Commission

ON

AN OIL AND GAS LEASE APPLICATION

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SUMMARY

The Montana Department of Fish, Wildlife & Parks received an application from Williams Exploration Company during September 1980 requesting lease of the department's oil and gas rights on the Sun River Wildlife Management Area (WMA). Williams Exploration (parent company to Rainbow Resources, Inc.) is endeavoring to lease all mineral rights within T21N, R8W - or the area encompassing the Sun River WMA. The department controls about 20,000 acres, or approximately 86 percent, of the surface rights and roughly 7,200 acres or 33 percent of the mineral rights on the Sun River WMA. The exact activities planned on the area are not known, but exploratory well drilling is intended.

The Sun River WMA is located in Lewis & Clark County, 12 miles northwest of Augusta, Montana along the East Front of the Rocky Mountains. It provides winter range for the Sun River elk herd, whose current population stands at approximately 2,500 elk. Mule deer winter on the area, as well as a small herd of pronghorn. The Sun River WMA provides seasonal range for both grizzly and black bears, as well as mountain lion, white-tailed deer, mountain goat, furbearers and a number of other mammal and bird species. The Front area, including the wildlife management area, is used during summer by the largest bighorn sheep herd in the contiguous United States.

The rules adopted by the Montana Fish and Game Commission which implement the Montana Environmental Policy Act (MEPA) require that a preliminary environmental review (PER) be compiled when a proposed action might significantly affect the quality of the human environment. The current oil and gas leasing policy for department controlled lands is a two step process which involves obtaining a permit to conduct seismic exploration and a lease to conduct exploratory drilling or development of a site.

Decision alternatives before the commission at the preliminary environmental review stage are:

1. Deny the lease request.
2. Require compilation of a comprehensive environmental impact statement to determine whether a lease should be granted (cost of which is borne by the applicant).
3. Defer consideration of the application until the department completes a programmatic review of mineral rights and leasing procedures on department owned lands.

This PER was undertaken to fulfill the requirements of MEPA, as well as provide information to the Montana Fish & Game

Commission for their analysis on whether to consider leasing mineral rights on the Sun River WMA. The history and status of the Sun River WMA, a brief technical summary of what natural gas field exploration and development entails, and an overview of oil and gas development activities occurring along the Montana Disturbed Belt of the Rocky Mountain Front are discussed.

DESCRIPTION OF THE SUN RIVER WILDLIFE MANAGEMENT AREA

The Sun River WMA lies along the western flanks of the Sawtooth Range, which is more commonly referred to as the East Front of the Rocky Mountains. Located in westcentral Montana, the Sun River WMA is bounded by rolling prairie on the east and mountains on the west. The Blackfeet Indian Reservation lies 45 miles to the north, the Great Bear, Bob Marshall and Scapegoat wilderness areas lie to the northwest, west and southwest, respectively (Figure 1). Great Falls, the second largest city in Montana with a population of 60,000, is located 65 miles to the east.

Progressing westward from the eastern prairie and foothills of the wildlife management area, the terrain slopes gently upward to the abrupt foot of the precipitous north-south trending limestone escarpment known as Sawtooth Ridge. The elevational range is from 4,300 to 8,179 feet above sea level. Retreating glaciers during the last ice age left moraines, small lakes and potholes on the east and north portions of the area. Burdoff and Barr creeks are the two major drainages on the area; the former flows north to the Sun River, while the latter flows south, then east and enters the Sun River 20 miles below the mount of Burdoff Creek.

Strong southwesterly winds are the predominant climatic feature of the wildlife management area. These winds, together with light precipitation, contribute to the prime quality of this area as big game winter range. Periods of complete snow cover are rare, and when they do occur they last for only short periods. The average annual precipitation is 15-18 inches and the average annual temperature is 42 degrees Fahrenheit.

Numerous potholes, small lakes and streams vary in water quality from poor in many of the eastern alkali potholes to excellent in the trout fishery streams. There are approximately 50 bodies of standing water, totaling over 135 acres and 23.5 miles of perennial streams on the study area.

Topography, soil conditions and climatic features of the area, combine to create a striking dichotomy of pine and prairie.

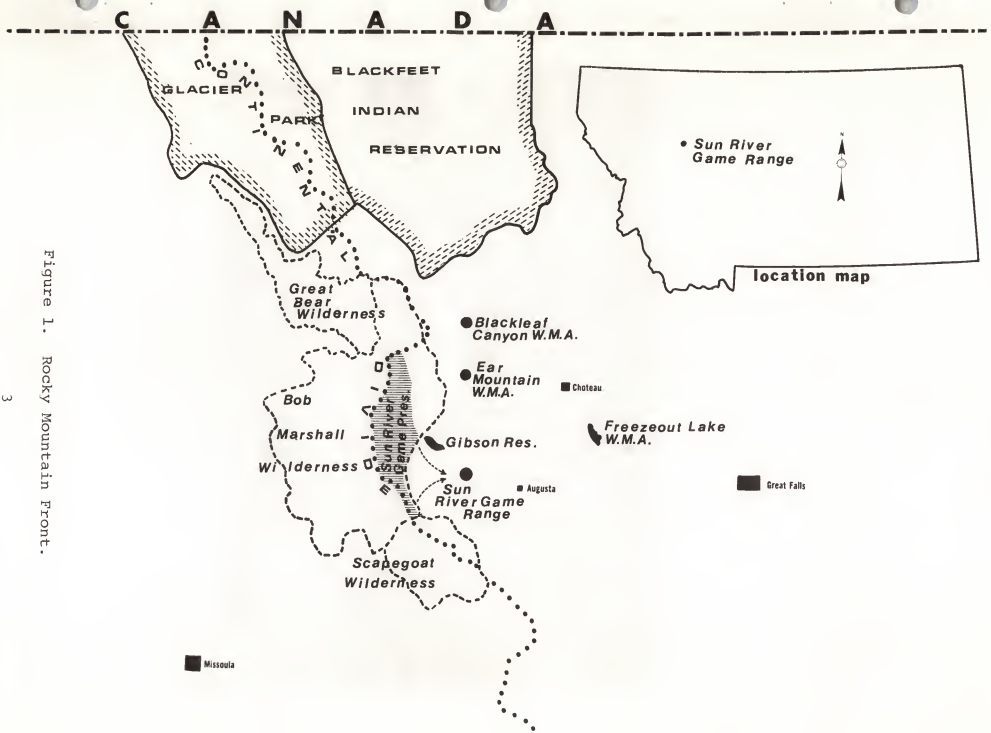

Figure 1. Rocky Mountain Front.

While the vegetative community of the prairie is dominated by western wheatgrass (Agropyron spicatum), needle and thread (Stipa comata), and rough fescue (Festuca scabrella), the conifer community of the western hill and mountain terrain is composed primarily of limber pine (Pinus flexilis), Douglas-fir (Pseudotsuga menziesii) and occasional stands of quaking aspen (Populus tremuloides). Complete descriptions of the vegetation occurring on the Sun River WMA are provided in Harvey (1980).

HERITAGE OF THE SUN RIVER WILDLIFE MANAGEMENT AREA

The colorful history of the Sun River country is treated in depth in the book, Saga of the Sun, by H. and I. Picton. Recorded Sun River history dates back to 1805, when Lewis and Clark spent several days in the area. Archaeological evidence indicates that for thousands of years the foothills of the East Front have been important Indian hunting grounds and camp sites. Fossil remains from the Pleistocene ice ages reveal that woolly mammoths and ancestors of present day elk were abundant. White men became established during the 1860's, when farming and ranching were first attempted. Within 10 years of the arrival of ranchers, an estimated 3,000 head of cattle roamed the Sun River drainage. As early as the 1890's, residents in the Augusta, Choteau and Great Falls areas became concerned over declining game populations as market hunters appeared to be taking their toll.

Establishment of the Sun River Game Preserve in 1913 created the need for the Sun River Game Range, which was to be created some 35 years later. With all good, but misguided intentions, the Sun River Game Preserve was established to protect the Sun River elk herd from overhunting. The result was an expanding elk herd which came to seek winter forage in the alfalfa fields and haystacks of private landowners along the Front. After decades of herding, hazing and unsuccessfully trying to influence winter movements of elk, the Department of Fish and Game, in 1947, succeeded in purchasing 12,000 acres of key elk wintering areas, and consolidating another 8,000 acres of federal and state lands into the Sun River Game Range (game ranges are now officially known as "wildlife management areas."). Once created, the game range dramatically reduced landowner problems as the elk adapted to using the area. The department and a private owner holding a key tract south of the game range entered into a legal agreement designating six sections of the A. B. Cobb ranch as a migration corridor. This permanent easement ensured a vital migration route for the majority of elk using the game range.

The 20,000 acre Sun River WMA provides winter range for 2-3,000 elk which use a 960,000 acre area during summer. Fall migration onto the area begins during early November to December, while spring migration off the area generally occurs in April and May. A resident group of from 20-70 elk uses the area yearlong.

Elk are not the only big game animals to benefit from establishment of the WMA, however. Bighorn sheep - the largest herd in the contiguous United States - benefited when competition with elk for forage was eased by providing elk a place on which to winter. Bighorn sheep are susceptible to parasites and disease, particularly in crowded, stressful conditions.

Prior to creation of the WMA, sheep suffered numerous die-offs. Sawtooth Mountain is used by bighorns during summer and fall, but a lack of secure terrain on which to winter encourages movement onto adjacent areas during that season.

Most of the wildlife study emphasis in the Sun River drainage has focused on elk and bighorn sheep. There is a lack of in-depth information on other species which use the area. Although wintering elk receive most of the attention, the area's value as mule deer winter range is significant. Mule deer seasonal use patterns are similar to those of elk, although deer are more numerous and more universally distributed over the area. Both mule deer and white-tailed deer are common year-long residents of the WMA, as are a small group of pronghorns on the eastern prairie. Mountain goats are reported to occur, although little is known of their use of the area. Hunting terrain appears suitable for mountain lions, and prey species are numerous. Even though mountain lions are known to occur here, the extent to which they use the WMA is not known. Family groups of both grizzly and black bears have been observed on the WMA, but the importance of the area in the ecology of these species has not been researched.

Threatened or endangered species as designated by the US Department of Interior, which are known to occur on the Sun River WMA include grizzly bear and bald eagle. Grizzly bears, classified as a threatened species, are seasonally observed on the WMA. Bald eagles, classified as endangered species, are commonly observed here during winter. The Rocky Mountain wolf (Canis lupus) and peregrine falcon (Falco peregrinus)are listed as endangered species. Both species may occur on the WMA during portions of the year, but little or no research has been done on either species in this area.

ENERGY DEVELOPMENT ALONG THE EAST FRONT

Montana's first oil well was located in Glacier National Park during 1901. Several other wells were also established in the park from 1903-1906, but all suffered short life-spans due to technological difficulties. During the 1950's, some exploration along the East Front (geologically known as Montana's Disturbed Belt) revealed favorable prospects, but it was not till the 1970's when OPEC significantly raised its prices that a chain of reactions within the oil and gas industry was precipitated and interest was shown in the Rocky Mountain region of Montana. First, the US government declared that a massive effort "akin to war" must be undertaken to locate and develop domestic reserves of energy; then Congress encouraged exploration in a number of ways, thus stimulating the industry to action. In 1975 some big discoveries were made along the Utah-Wyoming border. These discoveries encouraged exploration further to the north along the Overthrust Belt.

Table 1. Wildlife species known to occur on the Sun River WMA.

	Scientific Name
Big Game	
Elk	*Cervus canadensis*
Mule deer	*Odocoileus hemionus*
White-tailed deer	*Odocoileus virginianus*
Bighorn sheep	*Ovis canadensis*
Mountain goat	*Oreamnos americanus*
Pronghorn	*Antilocapra americana*
Mountain lion	*Felis concolor*
Black bear	*Ursus americanus*
Grizzly bear	*Ursus arctos*
Upland Birds	
Blue grouse	*Dendragapus obscurus*
Ruffed grouse	*Bonasa umbella*
Spruce grouse.	*Canachites canadensis*
Sharp-tailed grouse	*Pediocetes phasianellus*
Hungarian partridge	*Perdix perdix*
Ring-necked pheasant	*Phasianus colchicus*
Waterfowl	
Mallard	*Anas platyrhynchos*
Pintail	*Anas acuta*
Blue-winged teal	*Anas discors*
Green-winged teal	*Anas crecca*
Shoveler	*Anas clypeata*
Gadwall	*Anas strepera*
Redhead	*Aythya americana*
Canvasback	*Aythya valisineria*
Canada goose	*Branta canadensis*
Snow goose	*Chen caerulescens*
Whistling swan	*Olor columbianus*
Grebe	*Podiceps* sp.
Furbearers	
Beaver	*Castor canadensis*
Mink	*Mustela vison*
Muskrat	*Ondatra zibethica*
Bobcat	*Felis rufus*
Lynx	*Felis lynx*

Table 1 continued.

	Scientific Name
Predators	
Coyote	*Canis latrans*
Red fox	*Vulpes vulpes*
Wolverine	*Gulo gulo*
Badger	*Taxidea taxus*
Weasel spp.	*Mustela* spp.
Skunk	*Mephitis mephitis*
Raccoon	*Procyon lotor*
Raptors	
Goshawk	*Accipiter gentilis*
Red-tailed hawk	*Buteo jamaicensis*
Swainson's hawk	*Buteo swainsoni*
Rough-legged hawk	*Buteo lagopus*
Ferruginous hawk	*Buteo regalis*
Golden eagle	*Aquila chrysaetos*
Bald eagle	*Haliaeetus leucocephalus*
Marsh hawk	*Circus cyaneus*
Prairie falcon	*Falco mexicanus*
Great horned owl	*Bubo virginianus*
Burrowing owl	*Speotyto cunicularia*
Short-eared owl	*Asio flammeus*
Small Mammals	
Pica	*Ochotona princeps*
Cottontail	*Sylvilagus* sp.
Snowshoe hare	*Lepus americanus*
White-tailed jackrabbit	*Lepus townsendii*
Columbian ground squirrel	*Spermophilus columbianus*
Richardson ground squirrel	*Spermophilus richardsonii*
Yellow-bellied marmot	*Marmota flaviventris*
Red squirrel sp.	*Tamiasciurus hudsonicus*
Chipmunk sp.	*Eutamias* spp.

Montana's Disturbed Belt apparently does not harbor oil in significant quantities; natural gas, however, is found generally in deep pockets which have been formed through folding and faulting of the earth's crust. Until recently, the search emphasis has been for oil, but deregulation of natural gas prices has made it economically feasible to search for and develop pockets of gas which occur under rugged, remote terrain.

The Lewis & Clark National Forest reported over 200 oil and gas lease applications pending on forest lands - most of which are in counties bordering the East Front. Glacier, Teton, Pondera and Lewis & Clark counties occur on the East Front adjacent to the Continental Divide. In this four-county area during 1968, 32 wells were drilled; during 1980, 152 wells were drilled (Appendix 1).

To obtain an indication of the magnitude of leasing activity occurring along the East Front, school trust lands in 10 townships were inventoried from Department of State Lands files (Appendix 2). The DSL owns a total of 41,409 acres in these townships, 34,092 acres (82.3 percent) of which have been leased to more than 20 companies. In the state as a whole, over 3,600 wells are currently producing. The trend is upward, and is expected to continue.

To put Montana's energy production in perspective, the state produced 53.9 billion cubic feet of natural gas during 1979, while the nation consumed 54.8 billion cubic feet in an average day. Montana produced 30 million barrels of crude oil during 1979, while the nation used 18 million barrels per day. The amount of hydrocarbons which might be extracted from the Sun River WMA would play a very minor role in meeting either the state's or the nation's energy demands.

SURFACE AND MINERAL OWNERSHIP OF T21N, R8W

The surface and mineral ownership of the Sun River WMA are complex. About 85 percent of T21N, R8W is included in the WMA, which is composed of both state and federal lands. Certain parcels of land purchased by the department have had over 30 owners, resulting in 40 or more legal abstracts. The department purchased about 12,200 acres, or 53 percent of the township from private land holders. The remaining land within the WMA is administered by the Fish and Wildlife Service and the Bureau of Land Management. Each has transferred surface jurisdiction to the department through a series of agreements. These agreements include the 1951 Public Land Order 766, a 1952 Cooperative Agreement, a 1960 Memorandum of Agreement and the 1964 Notice of Approval of Classification Agreement (Appendix 3).

In conjunction with the establishment of the Sun River Game Range by the state, the Department of Interior, through Public Land Order 766, withdrew from mineral entry 4,144.83 acres of land within the township for the purpose of cooperating in the Federal Aid to Wildlife Restoration Program. Management of the surface rights was transferred to the Department of Fish and Game from the Bureau of Sport Fisheries and Wildlife by a Cooperative Agreement effective May 19, 1952. In addition to lands withdrawn under PLO 766, the US government retained mineral rights to about 6,800 acres of patented lands, most of which had been purchased by the department. This acreage was essentially deleted from mineral entry or leasing in the 1960 Memorandum of Agreement, which concluded:

> "The landownership pattern and minerals reserved to the United States is such that uniform application of oil and gas leasing classification is essential.... It is the conclusion of the examiners that oil and gas exploration, development and subsequent operational activities would not be compatible with the dedicated use of this area. It is the recommendation of the examiners that all of the public lands and private lands impressed with mineral reservations in T21N, R8W MPM be excluded from oil and gas leasing."

This agreement was published in the 1964 Federal Register (1483 - Vol. 29 No. 20) and titled "Notice of Approval of Classification Agreement." During 1980, the US Department of Interior was required to review all designated and de facto mineral withdrawals. It was recommended by the Bureau of Land Management that the federal mineral rights on the Sun River WMA remain in their current withdrawn or "excluded" status.

All grazing allotments on the 3,617 acres of school trust lands administered by the Montana Department of State Lands (DSL) on the WMA were leased by the Department of Fish and Game. In a controversial meeting of the State Land Board during March 1956, the board voted to withdraw the school lots located on the Sun River Game Range from a pending oil and gas lease sale at the request of the Department of Fish and Game and 50 attending sportsmen. The board further moved to consider the exchange of "in kind" property with the Department of Fish and Game in order to maintain the integrity of the Sun River Game Range. No action was ever taken on this motion. In 1978, the board leased 99 percent of its school trust lands on the game range to oil and gas interests.

The approximate current status of surface ownership in T21N, R8W includes: Fish, Wildlife & Parks (FWP) 12,173 acres; Fish & Wildlife Service (FWS) 4,144 (FWP jurisdiction); Department of State Lands 3,616 (FWP jurisdiction); Bureau of Land Management (BLM 2,200 (FWP jurisdiction); private 720; unknown 120.

The approximate current status of mineral ownership on T21N, R8W includes: FWP 7,240 acres; BLM 6,807 (not available for lease); BLM 4,144 (mineral withdrawal); DSL 3,616 (99 percent leased); private 1,040; unknown 120.

Within the state of Montana, the following state and federal agencies control surface rights: DSL 5,130,623 acres; FWP 316,232; BLM 8,140,990; national forests 16,733,232; Water & Power Resources Service 281,049; national parks 1,186,943; Indian lands 5,282,414; FWS 1,108,115; Army Corps of Engineers 496,607. Among the nine agencies listed, the Department of Fish, Wildlife & Parks ranks eighth in land holdings. Although the department does not have a tally of its mineral rights throughout the state, the 7,200 acres occurring on the Sun River WMA constitute less than 1/10,000 of 1 percent of the mineral ownership of Montana. The potential contribution of oil and gas to domestic energy production from development of the Sun River WMA would be negligible.

PHASES OF OIL AND GAS EXPLOITATION

Complete descriptions of each phase in the process from locating to producing fossil fuels are provided in the Forest Service Region 1 Oil and Gas Guide. Table 2 provides an abbreviated outline of the steps normally followed in locating and establishing a field. Preliminary geological exploration involves ground and aerial surveys of a given area, along with aerial photo and topographic map interpretation. Geophysical exploration may involve use of instruments suspended from aircraft to measure gravitational and magnetic deviations created from rock strata of varying densities and structures, respectively. These methods are used to aid in developing subsurface geological maps.

Methods used in seismic exploration vary, but the premise basic to all involves imparting an artifically generated shock wave into the ground in order to record the reflected waves from layers of different density rock strata. The data are analyzed to predict where fossil fuels may have collected. Several methods may be used to conduct seismic exploration. A thumper unit consists of a large truck (usually more than one is used at a time) from which is suspended a 3-ton steel slab which is repeatedly dropped to the ground from several feet in height. Support vehicles for equipment and crew are necessary. Vibroseis involves use of three or four large trucks, under each of which is mounted a platform. The platform can be lowered and the truck hydraulically raised above it to provide the weight necessary to generate a shock wave when a motor is turned on which vibrates the entire unit.

In the dinoseis method, a large bell-shaped metal chamber is mounted beneath a large truck and is lowered to the ground

Table 2. Phases of oil and gas exploration, development and production.

PRELIMINARY EXPLORATION
- GEOPHYSICAL EXPLORATION
  - gravity and magnetics
  - seismic
    - thumper units
    - vibroseis
    - dinoseis
    - explosives
      - subsurface
      - surface

EXPLORATORY DRILLING
- STRATIGRAPHIC TESTS
- WILDCAT

DEVELOPMENT
- FIELD DEVELOPMENT
- TRANSPORTATION DEVELOPMENT
  - roads
  - pipelines

PRODUCTION
- WELL FACILITIES
- SECONDARY RECOVERY
- DISPOSAL OF PRODUCED WATER
- ON-SITE PROCESSING
  - crude oil separators
  - natural gas sweetening plants

ABANDONMENT

at the test sites. Propane or oxygen is ignited inside the chamber with a spark to create an explosion, which, in turn, drives the required energy into the ground. The subsurface explosion method may utilize a large truck mounted with drilling equipment used to drill a 2-6 inch diameter hole 25-200 feet deep, into which is placed 5-50 pounds of explosive. When detonated, the explosion generates the shock wave. Each of the previous four techniques requires large, heavy-duty trucks needing 8-14 foot wide roads which are spaced at 1-2 mile intervals in a grid pattern. After the initial testing, road spacing may be reduced if the results were favorable, and the process is repeated. There can be little modification of the road system to accommodate topography. When rugged terrain prevents use of ground vehicles, portable drills may be back-packed or flown onto location and a series of 25-foot deep holes is drilled and salted with explosives and all are detonated simultaneously. The surface explosion technique involves driving stakes into the ground, over which are draped explosive packs connected in series with primacord down the grid line. The packs are detonated simultaneously. If preliminary exploration reveals favorable results, exploratory drilling takes place.

Stratigraphic tests involve drilling a hole 100-1000 feet or more from which rock chips are analyzed for traces of hydrocarbons and rock strata composition that lend detail to the geologic substructure maps. Only exploratory drilling, however, will confirm the existence of hydrocarbons in a given location. When an area's fossil fuel potential is unknown, the drilling operation is termed a wildcat. The deeper the deposits, the larger the drill rig needed. In Montana's Disturbed Belt, drilling to depths of 10,000-20,000 feet is not uncommon. At least 5 acres are needed to establish a drill pad, the rig, mud pit, tool shack, pipe rack and generators. From 5,000-15,000 gallons of water are needed daily to mix with drilling compounds, cool the engines and wash down equipment.

If "wildcatting" produces commercial quantities of fuels, the development phase is initiated. Field size may vary from less than 1,000 acres to several thousand acres, and some cover several townships. Maximum development of 1 square mile with oil rig spacing of 40 acres requires 4 miles of service roads. Gas well spacing in Montana varies from 10-40 acres on some of the older fields to 160-320 acres on the newer ones. In addition to drill sites, on-site processing facilities, storage tank batteries, road networks, and gathering and transmission pipelines are necessary before production can commence. Oil from a small field can be trucked to storage facilities, but it is not practical to truck natural gas, so pipelines are necessary. Gathering lines transport the fuel from the well site to collection facilities while transmission lines move it from storage to refineries. Gas cannot be transported in an oil pipeline and vice versa.

Once the field and transportation networks are developed, production begins. Most gas wells produce under normal pressure and do not require pumping. Initial oil recovery is often through natural pressure, but eventually secondary recovery methods are employed. Secondary recovery involves pumping water or gas into the field to recover the crude. Over 50 percent of the oil wells in Montana use secondary recovery methods. In the final withdrawal stages, detergents or chemicals may be introduced into the field to reduce viscosity of the oil for maximum recovery.

Water produced from the field (either water naturally associated with the crude or introduced water used for secondary recovery) must be discharged. This water is usually brackish to highly saline and must be treated to meet water quality standards before discharging into surface waters. Often, produced waters are injected into sealed, dry holes or played-out fields. The pressure under which oil comes from the ground determines how complex the process of separating water and gas from the crude will be. Chemicals, heat and methods to reduce pressure are employed in oil separating units which are located on-site or at a central collection point.

Similar units are used to separate condensate, moisture and other undesirable products from natural gas. Sour, or hydrogen sulfide laden natural gas must be "sweetened" (sulfur removed) on-site, since piping is not recommended. Natural gas found along the Disturbed Belt tends to be sour, so sweetening plants would be the norm at production sites. Hydrogen sulfide is extremely toxic. At levels of 600 parts per million (ppm), humans immediately lose consciousness and will succumb if artificial respiration is not administered. During an 8-hour work shift, levels of hydrogen sulfide should not exceed 10-20 ppm or human health may be impaired. Hydrogen sulfide is heavier than air and tends to accumulate in low spots (coulees, draws, marshes). It mixes with water to form a weak acid. Since natural gas containing hydrogen sulfide cannot be piped due to steel stress cracking (it eats the pipe away and escapes), processing plants must be constructed on or near the site of withdrawal. The process of removing sulfur from gas is complex; the plants needed to accomplish this require a maintenance crew to operate the plant, use up to 500 acres of land and cost several million dollars. Some sweetening plants have been large enough to justify railroad spurs to ship out the recovered sulfur; when smaller quantities of sulfur are produced, it is trucked out.

Depending on the size of a field, the production phase may last from 15-25 years. When it is abandoned, the holes are sealed and surface monuments are established to record the well name and location.

THE CONSEQUENCES OF ENERGY EXPLOITATION UPON WILDLIFE AND OTHER SURFACE RESOURCES

Oil and gas activities may have immediate and cumulative impacts upon a wide variety of resources. Table 3 presents a list of resource values which are affected by different phases of exploration, development and production. The USDA Forest Service Region 1 Oil and Gas Guide presents a general discussion of each affected resource value. The following summaries (except for wildlife) are derived from that guide. The likelihood of these potential impacts occurring can be determined only with site-specific analysis.

Air quality is affected by all active phases of oil and gas exploitation. The primary detriment to air quality results from dust created by vehicles using dirt roads. This problem may exist for years if the public continues to use the roads once oil and gas activities have ceased. Particulate matter from initial surface disturbance is generally small compared to use of unsurfaced roads. Pollution from engines, subsurface gases, noxious vapors from storage tanks and accidental explosions, fires, blow-outs, oil spills and leaks can occur.

Soil productivity and capability have the potential to be adversely affected when oil and gas activities disturb the earth's surface. Soil compaction and surface erosion bear directly on the productive potential of most soils. Once soil is compacted, it may never return to its normal state. Factors influencing compaction include the weight and number of vehicles crossing over a point and the type of soil. Once compacted, soil erosion is generally accelerated, since the porosity of the soil (and thus its ability to absorb water) is reduced. Where ground is left barren of organic surface cover, erosion is accelerated. Slope, of course, affects the rate of erosion. Erosion potential is greatest where mechanized equipment is used. Mantle stability can be influenced where road cuts occur, evaporation or mud pits leak, and surface runoff patterns are altered.

The major concern for water during oil and gas activities involves the deterioration of water quality (water quality is generally not altered). Abnormal sedimentation usually results from erosion where roads and trails cross streams - which are particularly common in the exploration (seismic) phase and when high grade roads, drill pads, processing facilities and pipelines are constructed. Channel scour may occur if sumps leak. Surface water contamination may occur from leaks in mud and evaporation pits, oil spills (both crude and refined), produced water and rare instances of blowouts. Ground water contamination may occur from surface leaching, introduction of well fluids into deep groundwater aquifers, or spills from buried pipelines.

Table 3. Oil and gas activities and affected resource values - oil and gas activity effects.*

	Preliminary Exploration	Exploratory Drilling	Development	Production	Abandonment
Air quality	x	x	x	x	x
Soil - compaction	x	x	x	x	N/A
erosion	x	x	x	x	N/A
mantle stability	x	x	x	x	N/A
Water - sedimentation	x	x	x	x	N/A
surface water contamination	N/A	x	x	x	x
ground water contamination	N/A	x	x	x	N/A
Geological hazards - subsidence	N/A	N/A	N/A	x	N/A
seismicity	N/A	x	x	x	N/A
Cultural values	x	x	x	N/A	N/A
Visual quality	x	x	x	x	N/A
Recreation - developed areas	x	x	x	x	N/A
recreation types	x	x	x	x	N/A
Fish	x	x	x	x	x
Socioeconomics	x	x	x	x	x
Wildlife	x	x	x	x	x

*Adapted from USDA Forest Service, Region 1, Oil & Gas Guide

Geological hazards other than those associated with surface soil movement (landslides, mud flows, avalanches) include subsidence and seismicity. Subsidence may occur during the production phase of operation if the fluid-holding rock is poorly consolidated, leaving spaces and resulting in compaction of rock. The ground surface may drop, which is known as subsidence. Oil and gas activities have been suspected of triggering seismic activity in areas prone to such disturbances, but little evidence exists to substantiate this.

Cultural values were presented earlier in the discussion of the historical and archaeological features of the Sun River WMA. The area has a rich Indian history and a well documented history of white man's immigration to and settlement of the area. Paleontologic records from the area are numerous, revealing a repertory of prehistoric animals. The Montana State Historic Preservation Office has been requested to conduct a file search for the area as required by the National Historic Preservation Act of 1966.

Visual quality of aesthetics of the area will be reduced during all phases of activity in the perspective of those who value undisturbed landscape.

No less than 30 recreation types have been identified on public lands in Montana. Four basic categories of recreation activities occur on the Sun River WMA, and include active appreciative (mountain climbing, backpacking, ski touring), active extractive (hunting, fishing, rock and plant collecting) passive appreciative (hiking, picnicking, pleasure driving) and sociable learning (group nature studies, organization-sponsored events). The Sun River WMA receives an estimated 3,000-6,000 recreational use days per year (Appendix 4). All human activities on the WMA are controlled to avoid interference with seasonal wildlife use.

Exploratory drilling and development in a given location are generally not compatible with recreational use. Recreation value would improve during production phase as equipment is removed from drill sites. However, aesthetic values could remain impaired due to noise from pumps and the presence of obnoxious gases and other production residues.

Direct mortality of fish is not likely to be significant unless serious accidental discharges of toxic substances occur into fishery waters. Indirect adverse effects may occur through alteration of resident and spawning habitat. Where bank vegetation is disturbed or destroyed, water temperatures may increase to intolerable levels for invertebrate food sources or the fish themselves.

Leakage from mud and evaporation pits could create chemical or temperature changes affecting invertebrate levels and fish. Introduction of sediments through surface or channel disturbance may damage spawning beds and aquatic insect producing areas.

The effect of oil and gas activities upon wildlife involves (1) direct mortality, and (2) stress from harassment and/or displacement. Direct mortality results from increased hunting and poaching pressures, wildlife-vehicle collisions and poisoning from contaminated air, water or unintentional mineral licks. These problems are known to occur with varying degrees of severity in areas where oil and gas is being sought. Stress is much more difficult to quantify than outright mortality, and has more complex consequences. Stress may reduce health and vigor of local wildlife populations, which, in turn, may result in mortality. Stress depletes animals by using stored energy to combat anxiety which would otherwise be used in immunological systems, body maintenance and fat storage. The most insidious effect of stress, however, occurs in the unborn, which must compete with external stimuli for energy from the mother. Young animals born to mothers under stress are often weak and small, thus reducing their chances of survival. Females exposed to stress are prone to reduced fertility, fetal resorption, spontaneous abortion, impaired lactation and antagonistic behavior toward offspring.

Direct mortality and/or stress are caused by increasing numbers of people, transportation systems and construction and maintenance activities, which in turn create the following types of impacts: habitat alteration or destruction, range dissection, physical harassment and noise disturbance. These impacts contribute to decreased security, reduced capabilities of the habitat to support wildlife and anxiety.

Since the consequences from construction of gas sweetening plants are not understood, this aspect of oil and gas activity warrants special attention. In addition to the acreage involved in plant construction, ancillary facilities, water pipelines and roads, a maintenance crew is required to run the plant and haul trucks or railroads to remove the sulfur are usually necessary. If the operation is small, it is not economical to ship out the sulfur, so hydrogen sulfide is stripped from the natural gas and burned and the sulfur is transformed into sulfur dioxide and associated sulfur compounds which are released to the atmosphere. Sulfur dioxide emissions, because of their adverse environmental consequences, are the basis for Montana's air quality standards. The levels at which wildlife are affected by hydrogen sulfide and sulfur dioxide are not known, and would likely vary from species to species, but at any level, the consequences of the gas itself and plant construction would be adverse.

The impact of oil and gas activities upon wildlife are not well understood, and little to no information is available regarding energy development and the consequences for wildlife along the East Front. Variable behavioral characteristics and differing seasonal use patterns between wildlife species would influence the type and degree of impacts. While elk are likely to be displaced from preferred use areas (with possible adjacent landowner complaints), deer are less flexible and are prone to remain in an area despite high potential of direct mortality. Although both species are disturbed, it is not possible to determine whether one is more affected than the other by human activities. Bears are documented to respond with fear and flight from helicopter and snowmobile activity, and have been known to abandon dens in the middle of winter when disturbed.

An increase in human disturbances tends to compound impacts upon wildlife. In addition to increasing activity at one development, concurrent adjacent developments significantly magnify wildlife impacts resulting in direct habitat loss, reduced habitat effectiveness and physical and psychological stress to animals over a large area.

ANALYSIS OF SOCIAL AND ECONOMIC IMPACTS[1]

There are substantial potential impacts on the human population that could result from oil and gas leasing on the Sun River WMA.

Major development could accompany oil and gas leasing on the 7,200 acres controlled by the Department of Fish, Wildlife & Parks on the Sun River WMA. This is particularly true since the federal government would likely proceed to leasing with federal minerals currently withdrawn from leasing to protect wildlife values. Such development has the potential for major impacts on all aspects of the area's human population. These aspects include: social structure and mores, cultural uniqueness and diversity, access to and quality of recreational and wilderness activities, local and state tax base, tax revenues, agricultural and industrial production, human health, quantity and distribution of community and personal income, transportation networks and traffic flows, quantity and distribution of employment, demand for governmental services, industrial and commercial activity, and demands for energy and locally adopted environmental plans and goals. Information on these aspects is presently limited.

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1. Taken from a report prepared for the Department of Fish, Wildlife & Parks by Dr. John Duffield, professor of economics, University of Montana, Missoula.

It is difficult to assess economic alternatives without assuming that the lands will eventually be leased, but the real purpose of land purchases by the department, i.e., to preserve, protect and enhance fish and wildlife values, must be constantly remembered. In order to analyze the economics of potential leasing of department mineral rights on the WMA, the policy used by the Montana Department of State Lands was studied. Bid prices for oil and gas lease tracts should largely be a function of three things: expected physical production from a given tract, the expected well-head price of oil and gas, and the level of competition for leasing of the tract. However, the system currently employed allows the oil and gas industry to time a development by simply expressing an interest in a particular tract. The tract is advertised by the state for the upcoming quarterly lease sale and put up for competitive oral bid. This policy was determined to be not in the best interest of the Department of Fish, Wildlife & Parks, nor would it be in the best interest of the resource values for which the area was purchased.

The question before the Fish and Game Commission is whether or not to extract the mineral reserves now. Since there is no risk of actually losing the mineral reserve, even a "no lease" decision has the effect of only deferring to another time and perhaps another commission.

The value of crude oil and natural gas fluctuates, depending on when it is extracted from the ground. Since a strong correlation exists between oil and gas lease bid prices and crude oil well-head prices, it is best to time extraction to maximize monetary returns. A careful analysis indicates an internal rate of return of about 24 percent per year on "oil in the ground" for the 1977-1980 period (including annual rental charges). To the extent that the mineral potential of the Sun River area is more likely to be gas than oil, the case for withdrawal is even stronger.

Crude oil prices are expected to increase above the rate of inflation at about 2.7 percent, while natural gas well-head prices are expected to rise 11 percent over and above the rate of inflation to 1985, and then at a rate of 5.5 percent thereafter. A 24-percent return per year on "oil in the ground" far exceeds the alternative investment opportunity available to the state, and suggests that a temporary or long-term withdrawal of some state lands may be in Montana's best interest. This is a particularly attractive alternative to Fish, Wildlife & Parks, since the department would not only realize a maximum on investment, but the unique qualities and values of the area would also be preserved. Consideration must also be given to impact on important nonmarket environmental and social benefits.

The late 1970's may prove to be exceptional as a period of rapidly rising crude oil prices. However, comparison of inflation rates, returns on alternative investments and US Department of Energy forecasts for increasing crude oil and natural gas prices indicate that withdrawal of some potential oil and gas lands may continue to be in the best interests of Montana and the Department of Fish, Wildlife & Parks.

ADMINISTERING OIL AND GAS ACTIVITIES ON DEPARTMENT LANDS AND ENFORCING AGREEMENTS

The Department of Fish, Wildlife & Parks has not been faced with processing oil and gas leases - for this reason it does not currently have an established procedure for handling them. In setting this procedure, the following must be established: application fees, a bidding or price-bargaining process (with a minimum acceptable price predetermined), rental rates or improvement projects in lieu of rent, lease duration, royalty rates, reclamation bond, stipulation options, company reporting requirements and methods of enforcement.

Once the department has researched possible legal encumbrances regarding oil and gas leasing due to prior agreements on a particular site, and determines that an area may be legally leased, this theoretical procedure could be followed: The site is put up for bid with the understanding that the highest bidder is obligated to pay for preparation of an environmental impact statement. The lease could, as an alternative, be negotiated with a single applicant. The final decision on whether to lease is determined by the commission. If the lease is granted, the department is obligated to prepare a fish and wildlife monitoring program for the site. Monitoring would occur concurrently with oil and gas activities. No application, lease or rental fees would change hands until stipulations were agreed upon.

Consideration should be given to methods of administering oil and gas activities on department lands. Some individual should be responsible for responding to permit and lease applications, implementing leasing procedures (once they are developed), conducting and overseeing preliminary environmental reviews and environmental impact statements, ground surveillance, ground application of biological monitoring recommendations, enforcement of lease stipulations, maintenance of documents, overseeing reclamation activities, coordinating information exchange between regions of the state and facilitating interdepartmental (agency) cooperation on oil and gas development.

If the option to proceed with an environmental impact statement is selected, the above considerations would need to be resolved in the process.

Agencies or departments currently having jurisdiction over lands on the Sun River WMA include:

US Bureau of Land Management
US Fish & Wildlife Service
Montana Department of State Lands
Montana Department of Fish, Wildlife & Parks

If development were to occur, in addition to those listed above, the following agencies or departments would have a legal obligation to become involved at various stages of development:

US Geological Survey
US Environmental Protection Agency
Montana Department of Health & Environmental Sciences, Water Quality Bureau & Air Quality Bureau
Montana Department of Natural Resources & Conservation, Oil & Gas Conservation Division and Facility Siting Division
Montana State Historical Preservation Office
Montana Department of Community Affairs
Montana Department of Highways
Montana Public Service Commission
Clerk and Recorder, Lewis & Clark County

DECISION OPTIONS

Precedent, authority and propriety hang in the balance of this decision. Options before the Montana Fish & Game Commission concerning lease of the Sun River WMA to Williams Exploration Company for oil and gas exploration include:

(1) Deny the lease request.

(2) Require a comprehensive environmental impact statement at the expense of the company in order to more thoroughly study the proposal.

(3) Defer a decision on this application until the department has completed a programmatic review of oil and gas leasing procedures on all department controlled lands.

The commission is not constrained to the above options.

Specific to the Sun River WMA, the following questions are likely to be raised if it is decided that leasing is to be pursued:

Would a decision to consider leasing -

(1) jeopardize department control of surface rights held by the US Fish & Wildlife Service in light of the Department of Interior-Montana Department of Fish, Wildlife & Parks agreements to maintain "the dedicated use of this area"?

(2) lead to Department of Interior reinstatement of minerals previously withdrawn on 4,144 acres of federal lands and on those in reserved status on 6,200 acres of coordination lands where the Department of Fish, Wildlife & Parks owns the surface rights?

(3) bring other areas of mineral withdrawal under scrutiny or challenge by the Department of Interior, since the Department of Fish, Wildlife & Parks originally requested them to protect wildlife values?

Some of these questions may be answered in this review process by responding federal agencies.

It is the intent of the Department of Fish, Wildlife & Parks to hold several public meetings to discuss this lease application for the Sun River WMA. Likely locations are at Great Falls, Augusta and Choteau at dates and places to be announced.

The department will make a recommendation to the commission following public response to this document.

INDIVIDUALS RESPONSIBLE FOR COMPILING PRELIMINARY ENVIRONMENTAL REVIEW

This preliminary environmental review was compiled under the direction of James Posewitz, administrator and Robert Martinka, chief, Bureau of Baseline Studies, Ecological Services Division by Gayle Joslin, department wildlife biologist.

The social and economic analysis section was excerpted from a report compiled by Dr. John Duffield, economist, University of Montana.

Numerous individuals participated in providing information about the Sun River WMA or oil and gas activities in general. Appreciation is extended to the following who assisted in this endeavor: Bert Goodman, manager, SRWMA; Don Malisani, lands agent FWP; Nels Thoreson, supervisor, FWP region 4; Natalie Walsh, Energy Division, DNRC; Bill Straley, geologist, Helena National Forest.

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Appendix 1. Summary of oil and gas drilling activity and production in selected western counties and in Montana as a whole.[1/]

	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
Cascade					1					1	-	-	-	-	3	2	2	-	4	-	3	2	
Choteau					-	2	5	1	2	5	14	13	6	19	46	138	47	13	43	32	27	16	
Glacier					27	18	29	39	63	28	13	41	21	29	39	19	23	25	65	29	29	26	14
Lewis and Clark					1						-	1	-	-	-	-	2	-	-	-	-	-	-
Liberty					17	31	40	42	32	21	37	25	21	25	32	28	33	52	60	71	33	45	
Pondera					14	18	9	29	18	18	15	44	17	9	14	3	9	26	36	30	51	81	112
Teton					22	8	4	3	8	4	4	5	2	-	4	7	17	20	8	15	4	21	26
Toole					23	69	113	124	136	52	46	45	22	16	29	31	48	66	101	124	109	120	
TOTAL					105			238	259		129	174	89	98	167	228	181	202	317	301	256	311	
Mt. Dev. Wells (O)	159	156	114	169	182	131	100	177	179	162	300	171	60	49	79	46	58	105	106	98	123	120	
(G)	7	12	4	6	16	6	7	9	9	14	14	44	30	36	97	165	179	261	264	220	223	235	
TOTAL (w/dry & abandoned)	212	239	176	235	255	197	216	293	284	280	403	320	153	119	263	311	449	588	539	506	578	537	
Mt. Exp. Wells (O)	12	7	14	7	8	8	22	14	10	7	15	15	12	3	7	6	7	6	17	24	21	35	
(G)	2	6	3	2	2	5	3	1	3	5	13	5	11	22	19	36	21	15	8	19	15	20	
TOTAL (w/dry)	123	114	167	182	164	165	175	214	198	203	537	486	272	348	461	408	293	257	248	172	215	266	
TOTAL WELLS	335	353	343	417	419	362	391	507	482	483	940	806	488	467	724	719	742	845	787	678	793	803	
No. Producing Wells (N)	3120	3888	3707	2447	2615	2550	2216	2649	2308	2097	1898	1827	1806	1768	1856	1708	1802	2067	1978	1999	2052	2089	
TOTAL	3916	3888	3707	3389	3692	3642	3329	3810	3507	3390	3391	3335	3212	3145	3134	2993	3100	3435	3309	3418	3546	3592	
Yrly. Production BBL (mill.)	27.96	29.8	30.2	30.91	31.65	30.87	30.65	32.78	35.38	34.96	48.46	43.95	37.88	34.60	33.90	34.62	34.55	32.84	32.81	32.68	30.46	29.96	
Yrly. Production Nat. Gas (bill. cu. ft.)							-	-	-	-	-	40.41	36.71	37.39	34.91	57.74	50.39	43.67	44.21	47.23	47.1	53.9	

1/ Taken from the Montana Department of Natural Resources and Conservation, Oil and Gas Conservation Division, Volumes 4-23.

Appendix 2. School trust lands (41,409 acres) occurring in 10 townships along the East Front. Section, acreage, name of oil and gas company holding current lease, bonus fee paid, rent per acre and lease expiration date are given.

T 22 N R 8 W	T 22 N R 7 W
T 21 N R 8 W SUN RIVER GAME RANGE	T 21 N R 7 W
T 20 N R 8 W	T 20 N R 7 W

Township 22 North Range 8 West

SECTION	ACRES	LESSEE	FEE	BID/ ACRE	EXP. DATE
1	360	Phillips Petroleum Co.	$540.00	18.00	88
2	73.45	" " "	110.17	15.00	88
3	40	" " "	100.00	15.00	88
4	80	--			
5	76.04	Pan Canadian Petroleum (60%) Barber Oil Exploration (40%)	76.04	2.25	83
9	40	--			
13	200	--			
16	640	Pan Canadian Petroleum (60%)	640.00	2.75	83
17	200	Barber Oil Exploration (40%)			
		" " " "	200.00	2.75	83
21	160	" " " "	160.00	3.00	83
25	360(SENE,S½)	--			
25	200(N½,NE,SW NE,S½)	Phillips	300.00	15.00	88
26	200	Superior Oil Co. (25%) Canadian Superior Oil (25%) Burlington Northern (25%) Rainbow Resources (25%)	200.00	1.00	83
27	240	(" - same)	240.00	1.00	83
28	240	Barber Oil Exploration (40%) Pan Canadian Petroleum (60%)	240.00	2.75	83
34	80	Mobile Oil Corp.	120.00	18.00	88
35	160	Phillips	240.00	16.00	88
36	640	Phillips	960.00	16.00	88

Township 22 North Range 7 West

4	157.43	Shell Oil	236.14	14.50	88
8	40SWSE	Mountain & Plains Oil Co. (25%), Walter Bloxsom (25%), Mountain & Plains Oil & Gas Investments (50%)	100.00	6.00	88
8	40SESE	--			
9	40	Mountain & Plains Oil Co. (25%), Walter Bloxsom (25%), Mountain & Plains Oil & Gas Investments (50%)	100.00	13.00	88
13	40	" " " " " " "	100.00	17.50	88
16	640	Ed Pendleton	960.00	14.25	88
17	160	" "	240.00	11.25	88
19	614.76	--			
20	120W½SW and SWNW	--			
20	80NWNW and SENW	Mobile	120.00	7.00	88

27	40	Mountain & Plains Oil Co. (25%), Walter Bloxsom (25%), Mountain & Plains Oil & Gas Investments (50%)	100.00	12.25	88
29	200	--			
30	400	--			
31	80	--			
32	40	Mobile	100.00	6.25	88
33	120N½SE and NESW	Amoco Production Company	180.00	5.00	88
33	80S½SE	--			
34	160	Wexpro (Sec. 34 & 35)	180/240	7.00	88
34	40NWNW	Wexpro	180.00	6.50	88
35	80	"	240.00		88
36	640	Fulton Producing Co.	960.00	14.00	88

Township 21 North Range 8 West

1	165.91	Phillips	248.86	12.00	88
2	80	Mobile	120.00	32.00	88
6	40	--			
8	40	Phillips	100.00	27.00	88
9	40	Mobile (Sec. 9 & 10 = 80)	120.00	31.00	88
10	40	"			88
11	200	"	300.00	32.00	88
12	120	Phillips	180.00	12.00	88
13	160	"	240.00	13.00	88
14	240	"	360.00	14.50	88
15	80	Mobile	120.00	34.00	88
16	640	"	960.00	57.50	88
17	160	"	240.00	58.00	88
21	200	"	300.00	45.00	88
22	120	Phillips	180.00	41.00	88
23	320	"	320.00	41.00	88
26	240	"	360.00	40.00	88
35	80	Mobile	120.00	42.00	88
36	650.62	Phillips	975.93	43.00	88
	3616.53				

Township 21 North Range 7 West

1	40	--			
2	401.88	Ed Pendleton	602.82	6.25	88
3	246.51	Amoco Production Company	369.76	6.00	88
5	368.82	--			
6	46.09	--			
7	45.72	--			
11	40	Amoco	100.00	5.00	88
15	240	"	360.00	3.00	88
16	640	Ed Pendleton	960.00	6.50	88
18	40	--			
19	42.40	--			
20	80	--			
21	40NENE	Ed Pendleton	540.00	6.00	88
22	320	"			88
27	80	Amoco	120.00	3.00	88
28	40	--			

35	120	Ed Pendleton	180.00	6.25	88
36	640	"	960.00	6.25	88

Township 20 North Range 8 West

2	120	Phillips Petroleum (Sec. 2 & 3)	240.00	101.00	88
3	40	" "			88
10	400	Gulf	600.00	90.00	88
11	480	Gulf	720.00	95.00	88
14	160	Gulf	240.00	65.00	88
15	240	Wexpro	360.00	135.00	88
16	633.68	"	950.52	141.00	88
32	120	Sun Oil	180.00	135.00	88
33	320	" "	480.00	145.00	88
34	40	Gulf	100.00	126.00	88
36	480	Gulf	720.00	85.00	88

Township 20 North Range 7 West

3	160	Sun Oil (Sec. 3 + 10 = 480)	720.00	6.25	88
4	120	" " (Sec. 4 + 9 = 240)	360.00	6.25	88
9	120	" " "			88
10	480	" " (Sec. 3 & 10) (Sec. 10 + 11 = 280)			88
11	120	" " (Sec. 10 & 11)	420.00	6.50	88
12	240	" " (Sec. 12 & 13)	540.00	6.25	88
13	120	" " (Sec. 12 & 13)			88
15	640	" "	960.00	6.00	88
16	640	" "	960.00	6.25	88
19	400	" "	600.00	6.00	88
20	600	" "	900.00	5.50	88
21	480	Reading & Bates Petroleum Co.	720.00	20.00	88
22	640	" " " "	960.00	23.00	88
23	640	" " " "	960.00	26.00	88
26	280	Sun Oil	420.00	12.00	88
27	320	" "	480.00	14.00	88
28	520	" "	780.00	11.00	88
29	640	" "	960.00	6.25	88
30	320	" "	480.00	6.25	88
31	200	Sun Oil (Sec. 31 & 32)	660.00	6.25	88
32	240	" "			88
33	200	" "	300.00	11.00	88
34	160	" "	240.00	11.50	88
36	480	" "	720.00	17.00	88

Township 26 North Range 8 West Blackleaf Canyon

1	160	Pacific International Production Co.	240.00	18.00	87
2	120	" " "	180.00	19.00	87
3	168.52	Shell Oil Co. SWNE, NESW, NWSE -- NESE	252.78	13.00	87
4	136.15	Sun Oil Co.	136.15	4.50	84

5	168.22	Burlington Northern (25%), Superior Oil (25%), Rainbow Resources (25%), Canadian Superior Oil (25%)	252.33	33.00	88
10	40	--			
11	160	Pacific International Production Co.	240.00	19.00	87
12	40	Shell Oil Co.	100.00	6.00	87
13	40	--			
14	40	--			
16	519.48	Burlington Northern (25%), Superior Oil (25%), Rainbow (25%), Canadian (25%)	779.22	42.00	88
17	80	--			
24	40	--			
36	320	Shell Oil Co.	480.00	15.00	87

Township 25 North Range 8 West

1	85.79	--			
2	292.17	--			
3	160	--			
4	40	--			
11	120	--			
12	240	--			
13	280	--			
14	40	--			
15	40	--			
16	549.04	Burlington Northern (25%), Superior (25%), Rainbow (25%), Canadian (25%)	549.04	4.00	83
22	160.46	--			
23	360.58	--			
24	320	--			
28	160	--			
29	360	Mobile Oil Corp.	540.00	47.00	88
32	280	Mobile	420.00	48.00	88
33	120	--			
34	160	--			
35	200	--			
36	640	Hunt Energy Corp. et al. (1%), Hassie Hunt Epl. Co. (22%), Hassie Hunt Trust (2%), Haroldson Hunt (2%), The Rosewood Corp. (15%), Hunt Indust. (1%), Nelson Bunker Hunt Trust Est. (24%), W. H. Hunt Trust Est. (12%), Lamar Hunt Trust Estate (21%)	960.00	16.00	87

Township 24 North, Range 8 West Ear Mountain

1	436.18	--			
2	311.08	--			
3	80	--			
11	80	--			
12	120	--			

13	40	--			
14	40	--			
15	40	--			
16	640	Lightning Productions (50%), Bond Operating (50%)	640.00	1.50	83
21	640	" " "	640.00	1.25	83
28	440	" " "	440.00	1.25	83
33	560	" " "	560.00	3.25	83
36	640	" " "	640.00	1.00	83

Township 23 North Range 8 West

1	152.9	--			
3	80	--			
4	34.6	Canadian Pet. (60%) Burmah Oil and Gas (40%)	114.60	3.00	83
4	80	Canadian Pet. Co. (60%) Barber Oil Exploration (40%)			
5	74.6	Can. Pet. (60%) Burmah (40%)	74.6	2.50	83
9	240	" " "	240	3.50	83
10	240	--			
11	40	--			
12	40	Lightning Productions Inc. (50%) Bond Operating Co. (50%)	50	1.00	83
13	80	" " " " "	80	1.00	83
13	120	--			
14	120	" " " " "	120	1.00	83
14	40	--			
15	80	--			
16	640	"	640	4.00	83
17	120	"	120	3.50	83
20	80	Can. Pet. Co. (60%), Barber Oil (50%)	80	3.25	83
21	280	Lignting Prod. Bond Operating	280	3.75	83
21	40	--			
22	40	Phillips	100	14.50	88
23	40	Bond (50%) Lightning (50%)	50	1.00	83
24	280	"	280	1.00	83
25	160	--			
26	200	Can. Pet. (60%) Burmac (40%)	200	1.25	83
27	160	Pancan Pet. (60%) Burmah (40%)	160	1.25	83
28	120	" " " " "	120	1.25	83
32	200	" " " " "	240	1.25	83
33	40	Pancanadian (60%) Barber (40%)			
34	40	Pancanadian (60%) Burmah (40%)	360	1.25	83
35	320	" " " " "			
36	640	Bond (50%) Lightning (50%)	640	1.00	83

Appendix 3. 1951 Public Land Order 766
1952 Cooperative Agreement
1960 Memorandum of Agreement, Sun River Winter Elk Range, Montana
1964 Notice of Approval of Classification Agreement

FEDERAL REGISTER

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TITLE 43—PUBLIC LANDS: INTERIOR

Chapter I—Bureau of Land Management, Department of the Interior

Appendix—Public Land Orders

[Public Land Order 766]

MONTANA

RESERVING CERTAIN PUBLIC LANDS IN CONNECTION WITH SUN RIVER WINTER ELK RANGE

Whereas the act of September 2, 1937, 50 Stat. 917 (16 U. S. C., secs. 669–669j), provides for Federal aid to States in wildlife-restoration projects; and

Whereas the State of Montana has established a Federal-aid wildlife-restoration project, and has acquired title to certain lands and wildlife control over other lands in Lewis and Clark County which are administered by the State of Montana through its Department of Fish and Game as the Sun River Winter Elk Range; and

Whereas certain public lands within and contiguous to the Sun River Winter Elk Range possess wildlife value and could be administered advantageously in connection with the project; and

Whereas the act of March 10, 1934, as amended by the act of August 14, 1946, 48 Stat. 401, 60 Stat. 1080 (16 U. S. C. 661–666c), provides for cooperation with Federal, State, and other agencies in developing a nation-wide program of wildlife conservation and rehabilitation:

Now, therefore, by virtue of the authority vested in the President, and pursuant to Executive Order No. 9337 of April 24, 1943, it is ordered as follows:

Subject to valid existing rights, the following-described public lands in Lewis and Clark County, Montana, are hereby withdrawn from all forms of appropriation under the public-land laws, including the mining laws but not the mineral-leasing laws, and reserved under the jurisdiction of the Department of the Interior for use by the Department of Fish and Game of the State of Montana in connection with the Sun River Winter Elk Range, under such conditions as may be prescribed by the Secretary of the Interior:

MONTANA PRINCIPAL MERIDIAN

T. 21 N., R. 8 W.,
Sec. 1, lot 3, $SE\frac{1}{4}NW\frac{1}{4}$, and $E\frac{1}{2}SW\frac{1}{4}$;
Sec. 2, lots 3 and 4, $S\frac{1}{2}NW\frac{1}{4}$, $SW\frac{1}{4}SW\frac{1}{4}$, and $E\frac{1}{2}SE\frac{1}{4}$;
Sec. 11, $E\frac{1}{2}NE\frac{1}{4}$, $SW\frac{1}{4}NW\frac{1}{4}$, $NE\frac{1}{4}SE\frac{1}{4}$, and $SW\frac{1}{4}SE\frac{1}{4}$;
Sec. 12, $NE\frac{1}{4}SW\frac{1}{4}$;
Sec. 14, $NW\frac{1}{4}NE\frac{1}{4}$;
Sec. 18, lots 1 to 12 inclusive, and $SW\frac{1}{4}NE\frac{1}{4}$;
Sec. 19;
Sec. 20, lots 1 to 11 inclusive, and $SW\frac{1}{4}SW\frac{1}{4}$;
Sec. 23, $SW\frac{1}{4}NE\frac{1}{4}$;
Sec. 29, $W\frac{1}{2}NW\frac{1}{4}$, $SE\frac{1}{4}NW\frac{1}{4}$, and $SW\frac{1}{4}$;
Sec. 30;
Sec. 31, $NE\frac{1}{4}$, $E\frac{1}{2}NW\frac{1}{4}$, $NE\frac{1}{4}SW\frac{1}{4}$, and $SE\frac{1}{4}$;
Sec. 32, lots 3 and 4, lots 8 to 11 inclusive, and $NW\frac{1}{4}NW\frac{1}{4}$;
Sec. 35, $NE\frac{1}{4}NW\frac{1}{4}$.

The areas described aggregate 4,144.83 acres.

The withdrawal made by this order shall be subject to the Executive order of February 26, 1917, establishing Petroleum Reserve No. 54, Montana No. 7, so far as such order affects the above-described lands.

ROBERT R. ROSE, JR.,
Acting Secretary of the Interior.

NOVEMBER 23, 1951.

[F. R. Doc. 51-14212; Filed, Nov. 29, 1951; 8:45 a. m.]

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COOPERATIVE AGREEMENT

THIS AGREEMENT entered into between the Department of the Interior through the Fish and Wildlife Service, hereinafter referred to as the Service, and the State of Montana, Department of Fish and Game, hereinafter referred to as the State, witnesseth that:

WHEREAS, the Service, pursuant to the Act of Congress approved August 14, 1946 (60 Stat. 1080; 16 U.S.C. 661-666c), is authorized to provide assistance to and cooperate with State agencies in the development, protection, rearing, and stocking of all species of wildlife, resources thereof, and their habitat; and

WHEREAS, it is the desire of the parties to this agreement to cooperate in the establishment of a game management unit to be known as Sun River Winter Elk Range and to be operated by the State as a wildlife refuge, public shooting grounds, or game management area; and

WHEREAS, the State represents itself as authorized and willing to assume the responsibility and cost of maintaining and operating the aforesaid game management area;

NOW, THEREFORE, it is mutually agreed, in consideration of the covenants and releases hereinafter contained, that

1. For the purpose of establishing a wildlife management unit to be operated and administered, together with 11,774 acres of land purchased by the State under Federal Aid Project 25-L, as a wildlife refuge, public shooting grounds, or game management area, and upon the conditions hereinafter set forth, the Service grants to the State the use and control of the following described reserved public lands:

Montana Principal Meridian, T21N, R8W:
Sec 1, lot 3, SE¼NW¼ and E½SW¼
Sec 2, lots 3 & 4, S½NW¼,SW¼SW¼, and E½SE¼
Sec 11,E½NE¼,SW¼NW¼, NE¼SE¼, and SW¼SE¼
Sec 12,NE¼SW¼
Sec 14,NW¼NE¼
Sec 18,lots 1-12 incl., and SW¼NE¼
Sec 19, All
Sec 20, lots 1-11 incl., and SW¼SW¼
Sec 23, SW¼NE¼
Sec 29, W½NW¼,SE¼NW¼ and SW¼
Sec 30, All
Sec 31, NE¼, E½NW¼, NE¼SW¼, and SE¼
Sec 32, lots 3 & 4, lots 8-11 incl., and NW¼NW¼
Sec 35, NE¼NW¼

2. The State agrees not to use or permit the use, and agrees to take such measures as may be necessary to prevent the use or occupancy, of said above-described lands or any portion thereof, for any purpose which is inconsistent or incompatible with the purposes herein specified.

3. The State agrees to refer to the Regional Director of the Fish and Wildlife Service all applications relative to permits, easements, or rights-of-way for roads, highways, telephone lines, electric power transmission lines, or any public utilities, on or affecting the above-described lands. With such referral, the State will indicate its recommendations as to the application, with a statement that such proposed uses will or will not interfere with the use of the lands for the purposes for which they are made available to the State.

4. The State agrees to report annually not later than August 1 to the Director of the Fish and Wildlife Service as to the use or non-use of the above-described lands for the purposes herein specified during the preceding fiscal year ending June 30.

5. The State agrees to notify promptly the Service, through the Regional Director of any intention to abandon the project.

6. All movable structures, facilities, equipment, etc., placed on the above-described lands by the State shall remain the property of the State and may be removed by it at any time within six months following termination of this agreement; provided that the promises are restored by the State to their condition as of the time this agreement becomes effective, as nearly as reasonably possible.

7. The State agrees to acquire by purchase or lease, insofar as feasible, such additional privately owned lands as may be necessary to consolidate the area in a satisfactory manner.

There are reserved all minerals (including fissionable materials) in or on the public lands described herein, together with the right of the United States through its authorized agents or representatives at any time to enter upon the lands and prospect for, mine, and remove the same.

No member of or delegate to Congress or resident commissioner shall be admitted to any share or part of this agreement, or to any benefit to arise therefrom, separate and apart from any benefit accruing to the general public.

This agreement shall become effective as of the date of a letter of notice from the Service informing the State that execution of the agreement has been completed and that the above-described lands are available for use by the State. At any time the State abandons the project or fails to utilize the lands for the purposes described herein, the privileges herein granted may be revoked in whole or in part by the Director of the Service, and may be revoked by reasonable notice in writing not exceeding 30 days if said lands are required for military or defense purposes during any period of national emergency declared by the President.

IN WITNESS WHEREOF, the parties have executed this cooperative agreement on the day, month, and year opposite their signatures thereto.

THE STATE OF MONTANA

Dated:

November 1, 1951

by: /s/ R. H. Lambeth
Fish and Game Warden
Department of Fish and Game

THE UNITED STATES OF AMERICA
DEPARTMENT OF THE INTERIOR

Dated:

April 21, 1952

by: /s/ R. H. Pierson
Acting Director
Fish and Wildlife Service

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MEMORANDUM OF AGREEMENT

SUN RIVER WINTER ELK RANGE, MONTANA

As provided under 43 CFR 192, a joint examination by representatives of the Bureau of Land Management, U. S. Fish and Wildlife, and the Montana Department of Fish and Game has been made of the Sun River Winter Elk Range on the attached map marked "Exhibit A."

This game range was acquired and developed by the Montana Department of Fish and Game under the Federal Aid in Wildlife Restoration Act (50 Stat. 917, as amended). The public lands were withdrawn by Public Land Order 766 of November 23, 1951, and were made available for the use and control of the Montana Department of Fish and Game by a Co-operative Agreement effective May 19, 1952 under the provisions of the Coordination Act (60 Stat. 1080 USC 661-666c). These withdrawn lands are described in the attached "Exhibit B."

In addition to the 4,144.83 acres of public lands withdrawn by Public Land Order 766, there are 40.09 acres (Lot 4 of Section 34, Township 21 North, Range 8 West, P.M., Montana) which are vacant public domain land and which were not included in Public Land Order 766. Over and above these public lands, there are mineral reservations on patented lands as follows: 3,630.99 acres of patented land on which coal and other minerals were reserved to the United States under the Act of December 29, 1916 (39 Stat. 862) and 3,176.17 acres of patented lands on which oil and gas only has been reserved to the United States under the Act of July 17, 1914 (38 Stat. 509). The majority of the patented lands involved in these reservations have been acquired by the Montana Department of Fish and Game. These reservations are shown on "Exhibit A" and described in the attached "Exhibit C."

WILDLIFE VALUES

The Sun River Winter Elk Range is one of the outstanding elk winter ranges in the west. This 20,000-acre area has been acquired and developed by the Montana Department of Fish and Game at a cost approaching $250,000. It provides winter range for about 3,000 head of elk that summer on the adjacent National forest lands. The annual harvest from this elk herd is between 750 and 800 animals or 26% of the herd.

Migration routes between summer and winter range are well defined. Through fencing and herding this winter elk herd is, for the most part, confined to the subject lands and serious depredations on adjacent private lands have been reduced to near insignificance.

Due to the isolation of the summer range, this elk herd is very wild and, therefore, particularly susceptible to disturbances. Through experience it has been found that any abnormal activity stampedes the elk to surrounding private lands and serious depredations result. Return to the higher timbered areas during the winter is impossible due to heavy snowpacks. It has been found necessary to control nonessential access, including photographers and low flying aircraft to prevent disturbance.

Due to the very serious consequences of any material disturbances of this elk herd on their range during the winter months, it is felt that oil and/or gas development operations could not be permitted.

LANDOWNERSHIP

The attached "Exhibit A" fully depicts the landownership pattern and minerals reserved to the United States. This pattern is such that uniform application of oil and gas leasing classification is essential.

RELATED DATA

Due to the National significance of this elk range, the Montana State Land Board has resolved that no oil and gas leasing will be permitted on State lands within the Sun River Game Range now under lease to the Department of Fish and Game.

Discussions with representatives of the Geological Survey indicate that no known structures exist in this area. While folds in the surface shale are favorable indicators, the underlying strata do not conform to the surface pattern.

CONCLUSIONS AND RECOMMENDATIONS

It is the conclusion of the examiners that oil and gas exploration, development, and subsequent operational activities would not be compatible with the dedicated use of this area. It is the recommendation of the examiners that all of the public lands and the private lands impressed with mineral reservations in T21N, R8W, M.P.M. be excluded from oil and gas leasing. It is further recommended that existing leases continue in effect, but that no extensions be granted.

/s/ J. R. Penny
Bureau of Land Management

/s/ W. J. Everin
Montana Department of Fish and Game

/s/ Regional Director
Bureau of Sport Fisheries and Wildlife

"Exhibit B"

Sun River Elk Range, Montana

Montana Principal Meridian

T. 21 N. R. 8 W.

Sec. 1, lot 3, SE¼NW¼, and E½SW¼;
Sec. 2, lots 3 and 4, S½NW¼, SW¼SW¼, and E½SE¼;
Sec. 11, E½NE¼, SW¼NW¼, NE¼SE¼, and SW¼SE¼
Sec. 12, NE¼SW¼;
Sec. 14, NW¼NE¼;
Sec. 18, lots 1 to 12 inclusive, and SW¼NE¼;
Sec. 19
Sec. 20, lots 1 to 11 inclusive, and SW¼SW¼;
Sec. 23, SW¼NE¼;
Sec. 29, W½NW¼, SE¼NW¼, and SW¼;
Sec. 30,
Sec. 31, NE¼, E½NW¼, NE¼SW¼, and SE¼;
Sec. 32, lots 3 and 4, lots 8 to 11 inclusive, and NW¼NW¼;
Sec. 35, NE¼NW¼

The areas described aggregate 4,144.83 acres.

"Exhibit C"

Sun River Elk Range, Montana

T. 21 N., R. 8 W., M.P.M.

(39 Stat. 862)	(38 Stat. 509)
Sec. 1, lots 1 to 6 Inc., SW¼NE¼, W½SE¼;	
Sec. 2	Lots 1 and 2, S½NE¼, NW¼SW¼, W½SE¼;
Sec. 3, SW¼NE¼, NE¼SW¼, NW¼SE¼;	SE¼NE¼, E½SE¼;
Sec. 4, SW¼NE¼, Lot 4, W½SW¼, N½SE¼, SE¼SE¼;	Lots 1, 2, 3, SE¼NE¼, SW¼SE¼;
Sec. 5, Lot 1, E½SE¼;	
Sec. 6, SW¼NE¼, NW¼SE¼;	
Sec. 7, NW¼SW¼;	
Sec. 8, NW¼SW¼;	
Sec. 9	NW¼NE¼, S½NE¼;
Sec. 10, NW¼NE¼, E½NW¼, E½SE¼	NE¼NE¼, S½NE¼, NW¼SE¼;
Sec. 11, NW¼NW¼, W½SW¼;	W½NE¼;
Sec. 12, SW¼SE¼,	Lots 1 to 4 Incl., W½NE¼, NW¼, NW¼SE¼;
Sec. 13, Lots 1 and 2, NE¼SW¼;	NE¼NW¼, S½NW¼;
Sec. 14, NW¼NW¼;	SW¼NW¼, SE¼NE¼;
Sec. 15, NE¼NE¼;	S½NE¼, S½NW¼;
Sec. 17, SW¼NE¼, NW¼NW¼, SE¼SW¼, E½SE¼;	
Sec. 20, NW¼NE¼, S½NE¼;	
Sec. 21, S½SE¼;	
Sec. 22,	E½NE¼, NW¼NW¼, S½NW¼;
Sec. 23,	E½NE¼, SW¼NW¼,
Sec. 24,	Lot 1, 4, NW¼NE¼, NW¼, SW¼SE¼;
Sec. 25,	NW¼, W½SW¼, SE¼SW¼, SW¼SE¼;
Sec. 26, NW¼NE¼, NE¼NW¼;	
Sec. 27,	SW¼SE¼
Sec. 29, E½, NE¼NW¼	
Sec. 32, Lots 1, 2, 5, 6, 7, SE¼	
Sec. 33, NW¼, N½SW¼, SW¼SW¼, NW¼SE¼	
Sec. 34, NE¼NW¼	SE¼NE¼, NE¼SE¼, lot 1;
Sec. 35, SE¼NE¼, N½SE¼, Lot 1;	SW¼NW¼, NW¼SW¼, lot 4;

Office of the Secretary

LANDS IN SUN RIVER WINTER ELK RANGE, MONTANA

Notice of Approval of Classification Agreement

Notice is hereby given that representatives of the Bureau of Land Management and the Bureau of Sport Fisheries and Wildlife of this Department and of the Montana Department of Fish and Game have, in accordance with the regulations 43 CFR 192.9, agreed that the following-described lands shall not be subject to oil and gas leasing, such activities being incompatible with the management thereof for wildlife conservation purposes. Group I comprises the lands in the Sun River project in which both the surface and the mineral interests are federally-owned, whereas the lands identified in Group II are former public domain lands which were patented under the public land laws with a reservation of the oil and gas deposits therein to the United States.

GROUP I

MONTANA PRINCIPAL MERIDIAN

T. 21 N., R. 8 W.,
Sec. 1, lot 3, SE¼NW¼, and E½SW¼;
Sec. 2, lots 3 & 4, S½NW¼, SW¼SW¼, and E½SE¼;
Sec. 11, E½NE¼, SW¼NW¼, NE¼SE¼, and SW¼SE¼;
Sec. 12, NE¼SW¼;
Sec. 14, NW¼NE¼;
Sec. 18, lots 1 to 12 inclusive, and SW¼NE¼;
Sec. 19;
Sec. 20, lots 1 to 11 inclusive, and SW¼SW¼;
Sec. 23, SW¼NE¼;
Sec. 29, W½NW¼, SE¼NW¼, and SW¼;
Sec. 30;
Sec. 31, NE¼, E½NW¼, NE¼SW¼, and SE¼;
Sec. 32, lots 3 & 4, lots 8 to 11 inclusive, and NW¼NW¼;
Sec. 35, NE¼NW¼.

GROUP II

MONTANA PRINCIPAL MERIDIAN

T. 21 N., R. 8 W.,
Sec. 1, lots 1, 2, 3, 6, 7, SW¼NE¼, W½SE¼;
Sec. 2, lots 1 and 2, S½NE¼, NW¼SW¼, W½SE¼;
Sec. 3, S½NE¼, NE¼SW¼, NW¼SE¼, E½SE¼;
Sec. 4, lots 1, 2, 3, 4, S½NE¼, W½SW¼, SE¼;
Sec. 5, lot 1, E½SE¼;
Sec. 6, SW¼NE¼, NW¼SE¼;
Sec. 7, lot 3;
Sec. 8, NW¼SW¼;
Sec. 9, NW¼NE¼, S½NE¼;
Sec. 10, E½NW¼, NE¼, NW¼SE¼, E½SE¼;
Sec. 11, NW¼NW¼, W½SW¼, SE¼SW¼, W½NE¼;
Sec. 12, lots 1, 2, 3, 4, W½E½, NW¼;
Sec. 13, lots 1, 2, 4, NE¼NW¼, S½NW¼, NE¼SW¼, SW¼SE¼;
Sec. 14, N½NW¼, SW¼NW¼, SE¼NE¼;
Sec. 15, NE¼NE¼, S½N½;
Sec. 17, NW¼NW¼, SW¼NE¼, E½SE¼, SE¼SW¼;
Sec. 18, NE¼NE¼;
Sec. 20, NW¼NE¼, S½NE¼;
Sec. 21, SE¼NW¼, N½SE¼;
Sec. 22, E½NE¼, NW¼NW¼, S½NW¼;
Sec. 23, SW¼NW¼, E½NE¼;
Sec. 24, lots 1, 4, NW¼NE¼, NW¼, SW¼, SE¼;
Sec. 25, NW¼, W½SW¼, SE¼SW¼, SW¼SE¼;
Sec. 26, NW¼NE¼, NE¼NW¼;
Sec. 27, SW¼SE¼;
Sec. 29, E½, NE¼NW¼;
Sec. 31, lots 1, 2, 3, 4, SE¼SW¼;
Sec. 32, lots 1, 2, 3, 6, 7, SE¼;
Sec. 33, NW¼, N½SW¼, SW¼SW¼, NW¼SE¼;
Sec. 34, lot 1, NE¼SE¼, SE¼NE¼, NE¼NW¼;
Sec. 35, lots 1, 4, SE¼NE¼, N½SE¼, SW¼NW¼, NW¼SW¼.

NOTICES

1. The lands described in Group I, containing a total of 4,144.83 acres, were withdrawn by Public Land Order 700 of November 23, 1951, and were made available for the use and control of the Montana Department of Fish and Game by a Cooperative Agreement effective May 19, 1952, under the provisions of the Coordination Act (60 Stat. 1080).

2. The lands described in Group II, containing a total of 6,007.16 acres, are patented lands in which the oil and gas deposits are owned by the United States. A majority of these tracts have been acquired by the Montana Department of Fish and Game and, together with certain State-owned school lands, some privately-owned lands which are leased, and the withdrawn public domain lands, comprise the 20,000-acre Sun River Winter Elk Range.

3. This project provides winter range for about 3,000 head of elk that summer on the adjacent National forest lands. This elk herd is very wild due to the isolation of the summer range and, therefore, particularly susceptible to disturbances.

4. In accordance with the regulations 43 CFR 192.9(b)(3), the classification agreement closing to oil and gas leasing the public lands withdrawn by Public Land Order 700 for the Sun River Winter Elk Range and described in Group I is hereby approved. It has also been determined that the leasing of the oil and gas deposits owned by the United States in the patented lands within this elk range area, described in Group II, would be incompatible with the use and development of the range. Therefore such reserved oil and gas deposits will not be subject to lease.

5. Any oil and gas lease offers for the lands described in this notice which have been suspended pursuant to the regulations 43 CFR 192.9(d), pending completion and approval of this classification agreement, will be rejected. Any oil and gas lease which is outstanding on these lands shall continue in force and effect for the term thereof, unless sooner relinquished or terminated; however, no such lease which was issued prior to the enactment of Public Law 86-705 on September 2, 1960, shall be granted an extension under the provisions of § 192.120, 43 CFR, except in the circumstances prescribed in subparagraph (d) thereof.

STEWART L. UDALL,
Secretary of the Interior.

JANUARY 22, 1964.

[F.R. Doc. 64-836; Filed, Jan. 28, 1964; 8:48 a.m.]

29 FR 1483 Pub 1-29-1964

Appendix 4. Estimated human use* of the Sun River Wildlife Management Area, 1975-1978.

	Big Game				Game Birds				Total Hunters			
Number of Hunters and Days Hunted	75	76	77	78	75	76	77	78	75	76	77	78
Opening Day	160	300	300	219	53	31	31	46	213	331	331	265
First Week	300	550	425	350	75	40	45	90	375	590	470	440
Remainder of Season	500	250	200	200	25	40	30	40	525	290	230	240
Seasonal Total	960	1,050	925	769	153	111	106	176	1,113	1,161	1,031	945
Hunter Vehicles									Total Vehicles			
Opening Day	54	116	153	73	31	20	15	16	85	136	168	89
First Week	125	206	200	150	45	25	25	40	170	231	225	190
Remainder of Season	210	150	100	150	10	25	20	25	220	175	120	175
Season Total	389	472	453	373	86	70	60	81	475	542	513	454

Other Recreation	Estimated Number of People				Number of Recreation Days			
Fishing	1,000	1,200	900	1,200	1,500	1,500	900	1,200
Sightseeing	1,200	2,000	1,000	750	1,200	2,000	1,000	750
Photography		200	100	75		250	100	75
Camping	50	125	125	150	100	250	125	150
Horseback Riding	50	50	50	50	50	100	50	50
Berry Picking	25				25			
Hiking	400	200	250	250	400	200	250	
Total	3,225	3,775	2,425	2,475	3,275	4,350	2,425	2,475
Other Public Use								
Educational								
Jr. & Hi School	200	40	104		200	40	104	
Elem. School		192	83	138		192	83	138
Univ. School	23				23			
Work Training	50				100			
Range Training				31				31
Trapping			4	4			42	30
Civic Groups		61	42	16		61	42	16

Appendix 4 continued. Estimated human use* of the Sun River Wildlife Management Area, 1975-1978.

	Big Game	Game Birds	Total Hunters	
GRAND TOTAL OF HUMAN USE DAYS	4,711	5,804	3,727	3,635

* Human activities which are seasonally controlled to avoid interference with wildlife use of the game range.

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